AMENDMENTS TO THE CLAIMS:

Claim 1 (Previously presented): A method for performing biological reaction in a microfluidic biochip platform comprising the steps of:

(a) providing a plurality of microfluidic channels, said microfluidic channels each including a reaction zone defined by a section of a curved serpent-like structure, said reaction zone having a constant cross section area;

(b) immobilizing at least one biological probe in said reaction zone, to define a constant and consistent reaction volume independent of physical flow barriers in said microchannels to allow fluid to flow pass said reaction zone; and

(c) transporting fluid in said microfluidic channels to said reaction zone, and terminating flow to allow a portion of said fluid to react with said at least one biological probe, wherein said reaction volume is product of said cross-section area multiplied with length of said microfluidic channels having said at least one biological probe.

Claim 2 (Canceled)

Claim 3 (Previously presented): The method as defined in claim 1, wherein said microfluidic channels have dimension between 0.5 μm and 2 mm in equivalent diameter.

Claim 4 (Previously presented): The method as defined in claim 1, the microfluidic biochip platform further comprising at least one sample well containing a sample and at least one reagent well containing a reagent, wherein a portion of said microfluidic channels is connected to said at least one sample well and to said at least one reagent well.

Claim 5 (Previously presented): The method defined in claim 1, wherein said fluid in said microfluidic channels is transported by a pressurizing mechanism that provides a forward-moving fluid.

Claim 6 (Previously presented): The method defined in claim 1, wherein said at least one biological probe is immobilized on magnetic beads, and wherein the step of immobilizing said at least one biological probe in the reaction zone comprises the steps of:

(a) transporting said magnetic beads through said microfluidic channels;

(b) providing at least one external magnet adjacent said reaction zone; and

(c) activating said at least one external magnet to trap said magnetic beads.

Claim 7 (Previously presented): The method defined in claim 1, wherein:

(a) said at least one biological probe is immobilized on a first surface of a first plate;

(b) said microfluidic channels is patterned on a second surface of a second plate; and

(c) said first surface of said first plate is coupled to the second surface of said second plate.

Claim 8 (Previously presented): The method according to claim 1, wherein said probe is protein.

Claim 9 (Previously presented): The method according to claim 1, wherein said probe is nucleic acid.

Claim 10 (Previously presented): The method according to claim 1, wherein said probe is biological cell.

Claim 11 (Previously presented): The method according to claim 1 further comprising the step of detecting reaction in said reaction zone.

Claims 12-20 (Canceled)

Claim 21 (Previously presented): The method as in claim 1, wherein the step of transporting fluid to said reaction zone comprises transporting fluid to flow pass and beyond said reaction zone, wherein fluid remaining in said reaction zone corresponds to said reaction volume.

Claims 22 (Previously presented): The method as in clam 21, further comprising the step of transporting fluid from said reaction zone after reaction has taken place, by flowing the fluid in said reaction zone pass and beyond said reaction zone in the same direction as flow of fluid into said reaction zone prior to reaction taking place.

Claim 23 (Previously presented): A method for performing biological reaction in a microfluidic biochip platform, comprising the steps of:

providing at least one microfluidic channel, said microfluidic channel including a section comprising a curved serpent-like channel and an output channel coupled to exit of said curved serpent-like channel;

immobilizing at least one biological probe in said section of curved serpent-like channel; and

transporting fluid in said microfluidic channel to said curved serpent-like channel, where a portion of said fluid reacts with said biological probe immobilized in the curved serpent-like channel, thereby to define a reaction zone having a constant and consistent reaction volume.

Claim 24 (Previously presented): The method as in claim 23, wherein said output channel is coupled to the curved serpent-like channel independent of flow barrier, and wherein the step of transporting fluid to said curved serpent-like channel comprises transporting fluid to flow pass and beyond said reaction zone and then terminating flow to allow reaction to take place, wherein fluid remaining in said reaction zone corresponds to said reaction volume.

Claim 25 (Previously presented): The method as in clam 24, further comprising the step of transporting fluid from said reaction zone after reaction has taken place, by flowing the fluid in said reaction zone pass and beyond said reaction zone in the same direction as flow of fluid into said reaction zone prior to reaction taking place.

Claim 26 (Previously presented): The method as in claim 23, wherein:

said biological probe is immobilized on a first surface of a first substrate;

said curved serpent-like channel is formed on a second surface of a second substrate; and

said first surface of said first substrate is coupled to the second surface of said second substrate.

Claim 27 (Previously presented): A biochip platform for biological reaction, comprising:

a body having at least one microfluidic channel, said microfluidic channel including a section comprising a curved serpent-like channel and an output channel coupled to exit of said curved serpent-like channel;

means for immobilizing at least one biological probe in said section of curved serpent-like channel; and

means for transporting fluid in said microfluidic channel to said curved serpent-like channel, where a portion of said fluid reacts with said biological probe immobilized in the curved serpent-like channel, thereby to define a reaction zone having a constant and consistent reaction volume.

Claim 28 (Previously presented): The biochip platform as in claim 27, wherein the body comprises a first substrate and a second substrate, wherein:

said biological probe is immobilized on a first surface of the first substrate;

said curved serpent-like channel is formed on a second surface of the second substrate; and

said first surface of said first substrate is coupled to the second surface of said second substrate.

Claim 29 (Previously presented): The biochip platform as in claim 27, wherein the means for immobilizing comprising a magnet that can be activated on and off, and the biological probe comprises a magnetic bead.

Claim 30 (Previously presented): The biochip platform as in claim 27, wherein the means for transporting comprises a pressurizing mechanism.